

REMARKS**CLAIM REJECTIONS UNDER 35 U.S.C. §103**

Claims 1-5, 7-18 and 21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Izawa et al., JP 11-102894A in view of Wolf et al., "Silicon Processing for the VLSI Era Volume 1: Process Technology" for the reasons set forth on page 2 of the Office Action.

PATENTABILITY OF THE CLAIMS

By this amendment, independent claims 1 and 10 have been amended to recite that the etching gas contains at least one of Br and Cl. This amendment is supported in the original specification at page 22 lines 8-19 and in the substitute specification at page 22 lines 10-21. It is submitted that this amendment renders claim 1 and claims 3, 4 and 21 dependent therefrom and claim 10 and claims 11, 12 and 13 dependent therefrom, patentable.

The Izawa et al specification in paragraph 0001 of the machine translation provided with the Office Action of April 2, 2002 states that "...this invention relates to the dry etching system and the dry etching system and the dry etching technique of realizing a high precision drive etching manipulation of a silicon oxide layer ...". Accordingly,

Applicants' dry etching method as now set forth in amended claims 1 and 10 which uses etching gas containing at least one of Br and Cs for gate metal etching, is not obvious even if Izawa et al is combined with the Wolf reference.

With respect to unamended claims 8, 17 and 18 and the claims dependent therefrom, Applicants submit that these claims are patentable for the following reasons.

In again rejecting these claims, it continues to be the Examiner's view that the Izawa et al JP reference shows Applicants invention substantially as claimed but that it fails "to expressly disclose introducing a gas selected from O_2 , SF_6 , CF_4 and SiF_4 into the etching treatment chamber in addition to Ar and a CF group gas." To allegedly teach these deficiencies of Izawa et al, the Examiner cited the Wolf et al article as disclosing "that the addition of O_2 , to a fluorocarbon based etchant will reduce the amount of polymerization during etching and increase the etch rate...". The Examiner accordingly again held that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Izawa et al so as to add a diatomic oxygen gas to the etchant compositions because this will increase the etch rate and reduce the amount of etchant by-products deposited on the workpiece."

The Izawa et al reference relates to a method and device for dry etching in order to obtain a high selectivity ratio on a film of high aspect ratio by a method wherein the two or more plasma regions, having different electron temperatures are formed, and the quantity of formed ions in the F with respect to CF_2 are controlled independently. The cited JP 11-102894A reference does not disclose introducing the specific gases set forth in these claims as amended. Thus, the components of gas used in the JP 11-102894A reference are as follows:

Example 1 (paragraph 0017): Ar, C_4F_8 and CH_2F_2

Example 2 (paragraph 0023): Ar, C_4F_8 and CH_2F_2

Example 3 (paragraph 0024): Ar, C_4F_8 .

The Wolf article relates to etching silicon and silicon dioxide in fluorocarbon-containing plasmas wherein the issue discussed by Wolf et al is the selection ratio of SiO to Si . This issue is quite different from the teachings of Izawa et al.


Applicants submit that therefore it would not be considered obvious to a person having ordinary skill in the art to combine Wolf et al with Izawa et al as the Examiner suggests. Applicants therefore respectfully disagree with the Examiner's contention "that the motivation to combine Wolf et with Izawa et al needs to be found in Wolf et al" and "that

adding diatomic oxygen avoids polymerization and therefore contamination of the wafer as clearly shown in Fig. 10 on page 551 of Wolf et al, and therefore a *prime facie* case of obviousness exists".

It is therefore submitted that independent claims 8, 17 and 18 and claims 9, 11, 12 and 13 dependent therefrom are also patentable.

In view of the foregoing amendments and remarks, Applicants contend that this application is in condition for allowance. Accordingly, reconsideration and reexamination are respectfully requested.

Respectfully submitted,


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